



US009636160B2

(12) **United States Patent**  
**Honda et al.**

(10) **Patent No.:** **US 9,636,160 B2**  
(45) **Date of Patent:** **May 2, 2017**

(54) **IMPLANT**

(71) Applicant: **OLYMPUS CORPORATION**, Tokyo (JP)

(72) Inventors: **Jun Honda**, Tokyo (JP); **Takamitsu Sakamoto**, Tokyo (JP)

(73) Assignee: **OLYMPUS CORPORATION**, Tokyo (JP)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **15/378,558**

(22) Filed: **Dec. 14, 2016**

(65) **Prior Publication Data**

US 2017/0086897 A1 Mar. 30, 2017

**Related U.S. Application Data**

(63) Continuation of application No. PCT/JP2015/054322, filed on Feb. 17, 2015.

(30) **Foreign Application Priority Data**

Jun. 26, 2014 (JP) ..... 2014-131221

(51) **Int. Cl.**

**A61B 17/04** (2006.01)

**A61B 17/84** (2006.01)

**A61F 2/08** (2006.01)

**A61B 17/86** (2006.01)

(Continued)

(52) **U.S. Cl.**

CPC ..... **A61B 17/866** (2013.01); **A61L 31/022** (2013.01); **A61L 31/148** (2013.01)

(58) **Field of Classification Search**

None

See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2011/0313527 A1 12/2011 Witte et al.

2012/0156477 A1 6/2012 Kurze et al.

2012/0183923 A1 7/2012 Takagi et al.

(Continued)

**FOREIGN PATENT DOCUMENTS**

EP 2668966 A1 12/2013

JP 2008-125622 A 6/2008

(Continued)

**OTHER PUBLICATIONS**

International Search Reported dated Apr. 28, 2015 issued in PCT/JP2015/054322.

(Continued)

*Primary Examiner* — Sameh Boles

(74) *Attorney, Agent, or Firm* — Scully, Scott, Murphy & Presser, P.C.

(57) **ABSTRACT**

An implant including a screw body composed of pure magnesium or a magnesium alloy and having a male thread, and the implant further including an anodized membrane covering an outer surface of the screw body. The male thread has a clearance flank and a pressure flank. The clearance flank faces forward in a traveling direction and the pressure flank faces rearward in the traveling direction during a screwing process of the screw body. The biodegradation period of the anodized membrane on the clearance flank is shorter than the biodegradation period of the anodized membrane on the pressure flank.

**5 Claims, 5 Drawing Sheets**

